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ABSTRACT

Designed for school personnel, the booklet suggests a framework for providing programs for the gifted and talented (G/T) students that will develop a concern for environmental problems. After a description of environmental education and a rationale for its place in the classroom, descriptions of three Indiana programs for G/T students are provided. Suggestions for projects in each of the following areas are listed (with sample projects in parentheses): community documentation, preservation, and restoration (plan and implement a series of informational presentations on the history of the community emphasizing ecological trends); environmental improvement (monitor the water quality of water resources near the community and make the information available to the appropriate sources); and energy conservation (cooperate with local mechanics to develop a car tune up campaign). A list of principles of a G/T environmental education program is provided and resources for projects, such as business, industry, and organizations, are surveyed. (PHR)

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Environmental Education for the Gifted and Talented

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ENVIRONMENTAL EDUCATION FOR THE GIFTED AND TALENTED

I. ENVIRONMENTAL EDUCATION--WHAT IT IS

Many Americans are concerned about the degradation of our environment, which diminishes the quality of the human experience through: water deterioration, waning wildlife, urban sprawl, preempted open spaces, vanishing wilderness, noise, landscapes scarred by highways, litter and blight. This crisis is destroying beauty and increasing contamination, thus threatening not only the pursuit of happiness but also life itself.

Action to conserve the remaining natural environment and to maintain it will require a sense of husbandry and a sense of responsibility on the part of every American citizen. Unthinking people pollute the environment. Thinking people can effect a new environmentalism dedicated to: restoring as well as protecting, bringing beauty to the cities as well as the countryside, minimizing the waste of technology as well as natural resources and halting the massive deterioration of the environment as well as husbanding resources and values essential for the prosperity of the human spirit.

This, then, is environmental education: a recognition by man of his interdependence with his environment and all of life and of his responsibility for developing a culture which maintains that relationship through policies and practices necessary to maintain an environment fit for life and fit for living.

What is the difference between the new "environmental education" and the older "conservation education"? The newer term attempts to describe more precisely our efforts to come to grips with the degradation of man's surroundings from an ecological approach.

The scope of the new environmentalism is all encompassing. Whereas yesterday soil conservation, water conservation, forest conservation, wildlife conservation,

etc., were treated as separate units, today the ecological unity of all man-land interdependent relationships are the unit for study. The concern is not so much for the quantities of natural resources as for the quality of human experiences. Where conservation conjured up images of open country, "environmentalism" includes these images but, in addition, incorporates the pressing problems of the city.

It is in its basic cultural orientation that the new environmentalism differs most strikingly from its antecedent, conservation. The latter, in the words of Gifford Pinchot, stood clearly for economic development, for the infinite goodness of American "progress." But environmentalism reflects a growing suspicion that bigger is not necessarily better, slower can be faster and less can be more.

These principles suggest that the emphasis on an environmental education curriculum be the development of a citizenry which is knowledgeable of the bio-physical environment and its associated problems, capable of resolving them and motivated to do so. The inclusion of environmental education in the school program is a response to a need--a need for citizens who can identify and resolve problems affecting the quality of the environment. Good citizenship is already a goal of the school. Environmental education helps the school achieve it, not by adding a new subject area to an already overcrowded curriculum, but by working through existing curricula to make education relevant and responsive to societal needs. Its objective is the development of strong, rational attitudes essential to the development of values which will motivate action to resolve environmental problems.

II. RATIONALE FOR ENVIRONMENTAL EDUCATION

We are all passengers on a spacecraft which constantly moves through space; this spacecraft is Planet Earth. As we (students, teachers and parents) rotate around the sun we carry with us limited amounts of natural resources. The resources we now have are all we will ever have. There is no present way of extending a pipe

line into space and "piping in" oil, coal, precious metals, wildlife, forest products, soil and other life supporting resources.

The life support systems of this Spaceship Earth have been severely damaged. Valuable mineral resources such as lead, zinc and copper will soon be gone forever. Natural gas and oil resources which provide energy for cars, homes, schools and businesses will soon disappear. In addition, we have contaminated our air, water and soil supplies with pollutants which have created health problems in many communities in Indiana, other states and the world.

If man is to survive in a livable environment, action must be taken immediately to manage our life support systems more effectively. Environmental Education is a management or stewardship approach to solving community, state and world problems. Environmental Education is an interdisciplinary process approach which develops an awareness of environmental problems, an understanding of why they exist, and encourages student action to help solve them.

Environmental Education encourages gifted and talented students to hypothesize, infer, research, collect data, observe, record, and make conclusions about an environmental problem. By permitting them to use these process skills the classroom teacher becomes a facilitator rather than a dominator of learning environs. Working as a "team", teachers and gifted and talented students formulate action plans for investigating environmental issues and solving some environmental problems. Participation might involve just one student, a small group, a class, or an entire school. EE projects will require educators and students to use many disciplines as they attempt to solve a community environmental problem. Science, social science, math, language arts, art, and reading are some areas of study which will be used to investigate environmental issues.

Environmental Education provides gifted and talented students with opportunities to become aware of their own potential. Environmental Education Programs will motivate them, encourage them, stimulate them and challenge them to further growth. Environmental Education will allow students freedom to find their own level and modes of learning and will provide them with unique and exciting experiences to enhance their growth and creative capabilities.

Environmental Education provides gifted and talented students with opportunities to examine environmental issues, discover relationships between natural and man-made systems, synthesize data, suggest solutions for solving problems and actively participate in projects to conserve natural resources and improve environmental conditions. This process approach teaches gifted and talented students to understand their environment and to make rational decisions about environmental issues so that a livable environment is provided to this and future generations.

III. INDIANA GIFTED AND TALENTED PROGRAMS IN ENVIRONMENTAL EDUCATION

Homestead Junior-Senior High School
4310 Homestead Road
Fort Wayne, Indiana 46804
Phone: (219) 432/6122
Contact: Douglas Waldman

Homestead offered two environmental education programs during the summer of 1977 to their gifted and talented students. Descriptions of these two programs are listed below:

A. CANOEING A WILDERNESS

This summer program included interdisciplinary classes for twenty students in grades ten, eleven and twelve. A fifteen day trip to the canoe wilderness of the Quetio Provincial Park in Northwest Ontario, Canada was planned by the students with two classroom teachers, Douglas Waldman and Jay Hammel, serving as instructors and facilitators.

The students helped plan the menu, transportation, curriculum, recreational tours and follow-up activities after returning to school. A slide/tape program was also organized by the students and is available to schools interested in organizing similar programs.

Classes and programs conducted at Homestead and during the 15 day trip included photography, survival training, President's physical fitness program, orienteering, ecology, environmental interpretation, water safety, canoeing and hiking techniques, geology, environmental leadership and environmental communications.

Criteria used to select the students included leadership skills, an interest in the environment, creative abilities, physical capabilities, good grades and intellectual abilities similar to other gifted and talented students in group.

All students participating in the program were required to keep a daily record of activities and experiences. Each of them was also challenged to do a back home project to help improve environmental conditions in the school community.

Tim Warren was selected to make a slide/tape presentation covering the course from its beginning instructional classes through the concluding evaluation meeting after the trip. The slides were taken by Tim, fellow students, and the instructors of the course. Tim was then responsible for the selection and arrangement of the slides, writing the narration, selection of narrators, selection of music, and the recording of the tape.

The Indiana Department of Public Instruction reimbursed the training staff for part of their salary and provided additional funds to help pay for the slide/tape programs.

B. BACKPACKING THE MONTANA ROCKIES

The second summer program involved another twenty gifted and talented high school students from Homestead traveling to the Beartooth Primitive Area in the Custer National Forest, Red Lodge, Montana. Criteria for selection of students were the same as the first course.

Meg Klingenberger was selected to make a slide/tape presentation covering the course from its beginning instructional classes through the concluding evaluation meeting after the trip. The slides were taken by Meg, fellow students, and the instructors of the course. Meg was then responsible for the selection and arrangement of the slides, writing the narration, selection of narrators, selection of music, and the recording of the tape.

C. Scribner Junior High School
910 Old Vincennes Road
New Albany, Indiana 47150
Phone: (812) 945/0298
Contact: Carl Booth

Environmental Education, Social Studies, Summits, and Survival is a gifted and talented course offered at Scribner Junior High School of the New Albany-Floyd County Consolidated School Corporation.

The ultimate goal of the course was to climb Long's Peak, Colorado, but it encompassed a great many activities. Long's Peak is the tallest mountain in Colorado's Rocky Mountain National Park at 14,256 feet above sea level. Students in this program met weekly and functioned as a club. One full unit of high school credit was given to the 30 club members upon completing the class. The course was offered exclusively to freshmen in the summer school program.

There were two advisor-instructors who helped with design and implementation of the course. The social studies advisor was Victor Megenity, and the science advisor was Carl F. Booth. Both Scribner Junior High teachers had experience in mountain climbing, survival training and outdoor education.

Each student had to take the President's Physical Fitness Test to meet the physical requirements of the course and participate in at least two of three twenty-mile hikes sponsored by the club. These hikes took place in Clark County State Forest in southern Indiana. Their purpose was to familiarize the members with the conditions that were present on the Long's Peak climb. All students had to complete class assignments which they were given to help prepare them for the program. If these assignments were not met in a reasonable time, students received demerits which were part of a constitution chosen by the club.

The students wrote the constitution to enable them to make decisions about problems concerning elimination of members, the planning of a route to and from Colorado, and ways of raising money to aid them in lowering the cost to members of the club.

The New Albany-Floyd County Consolidated School Corporation and the Indiana Department of Public Instruction were very helpful and very liberal in their attitude in adopting such a course.

The main objectives of the course were:

1. The planning of routes to and from Colorado, emphasizing the places of historical and geographical significance.
2. The experience of climbing a mountain and exploring an exciting part of our environment.
3. Making financial arrangements including funding, budgeting, cost projection, bookkeeping and accounting procedures.
4. Communicating with park personnel regarding tours and camping reservations.
5. Developing procedures for physical fitness preparation, discipline, emergencies, insurance, and publicity.
6. Assuming daily responsibilities for menus, food preparation, laundry, sleeping arrangements, entertainment, and interpersonal relationships.

Concepts to be developed:

1. The vastness of historical sites between Indiana and Colorado and the important role each played in the Great Westward Movement.
2. The cultural and geographical differences and similarities that exist between Indiana and Colorado.
3. The interrelationship of our physical and cultural environment.
4. The important role of the individual in the success of group activities.
5. The role of compromise in group activities.

All of the preparations, routes, activities, etc. were decided by the students, not the supervisors. During the year, there were fund-raising programs all of which were arranged and organized by committees of students. Every situation in the club was dealt with in this manner. If there was a problem, a volunteer committee did all the necessary work and research until it was completed. All activities were initiated and supervised by the instructors but rarely did they interfere with a decision made by the club.

Criteria used to select the gifted and talented students included:

1. Creativeness - each student participating in the program should possess creative abilities to help design the program.
2. Leadership - each student participating in the program should be able to assume a leadership role in helping to organize the project.
3. Intelligence - since this project was designed for gifted and talented students, each participant should have a general intellectual ability comparable to other students participating.

4. Psychomotor Ability - since the project includes strenuous physical activities, each participant must have strong psychomotor abilities.
5. Specific Academic Aptitude - this will also be used as a criteria for selecting students.

IV. CHALLENGES FOR GIFTED AND TALENTED STUDENTS

There are a number of local environmental activities and programs which can challenge gifted and talented students and provide them awareness experiences, conceptual understandings and action oriented projects. These interdisciplinary curricula foster creativeness, improve leadership skills and help make learning exciting and meaningful.

Some suggestions for gifted and talented environmental projects are provided so that you and your students can begin designing your own program:

A. COMMUNITY DOCUMENTATION, PRESERVATION AND RESTORATION

1. Work through the mayor's office to jointly plan and implement a community beautification project.
2. Work with appropriate groups to preserve or restore a historical site in the community.
3. Plan and implement a series of informational presentations on the history of the community emphasizing ecological trends.
4. Trace the historical development of the community and project future growth. Work through the local political unit, e.g. city council, mayor, city planner, etc., to jointly recommend future planning strategies for land use.
5. Identify "Green Acres" in cities and develop a strategy for maintaining endangered ones.

6. Develop a slide/tape or 8mm film on the history of the community emphasizing ecological concerns.
7. Interview older members of the community in order to learn about environmental practices and changes. A history of the area could then be developed on the basis of the information.
8. Research and reconstruct on a model scale the original community. Point out environmental characteristics of the community.
9. Identify basic environmental issues in the community and make a past-present analysis. Propose future changes in keeping with sound ecological practices.

B. ENVIRONMENTAL IMPROVEMENT

1. Monitor the water quality of water resources near the community and make the information available to appropriate sources.
2. Study noise pollution within the community and make recommendations for changes, e.g., rerouting traffic, staggered time schedules, etc.
3. Develop an environmental site on or near the school property and make recommendations for its use by the rest of the school.
4. Study the wildlife in the area and design a wildlife improvement habitat plan.
5. Design an "Earth Day" program for the school in conjunction with national Earth Day activities.
6. Study man's impact on the aging process of a lake and encourage lake property owners to take action to solve the problem. Disseminate information to interested individuals or groups.
7. Gather information on proposed environmental laws, resolutions, and ordinances and take appropriate action in support of those that are pertinent to the community.

8. Create an environmental education A-V presentation dealing with a local problem and make it available to school and community groups.
9. Design a dramatic production to illustrate the dependence of plants, animals and people upon water as a resource.
10. Plan and implement projects to attract acceptable forms of wildlife to the school site.
11. Develop a plan to help delay the zero supply date of a non-renewable resource and design a program to communicate the need for action.
12. Design a project for communicating the need for action to arrest and/or reverse the depletion rate of a renewable earth resource.
13. Conduct studies to determine the environmental impact of automobiles, boats or houses on a natural environment and design a program which could reduce this impact.

C. ENERGY CONSERVATION

1. Work with parents to make an analysis of energy conservation practices within the home, e.g., insulation, weather-stripping, thermostat settings, use of electric appliances, etc. Develop a plan to conserve energy and chart actual savings in terms of energy and dollars.
2. Cooperate with local mechanics to develop a car "tune-up" campaign. Special rates might be offered as part of the project plan.
3. Investigate the feasibility of local bus service or alternative mass-transit systems for the community. Make the information available to the city council or appropriate political unit.

4. Cooperate with the appropriate community groups to develop a pilot recycling center. The school might be used as a community recycling site.
5. Create a school SAVE club and promote environmental projects and energy conservation practices.
6. Survey the school and community to determine how energy is being misused.
7. Develop, implement and/or project the impact of a plan to reduce the number of automobiles driven to school by encouraging car pools, walking, riding buses, riding bikes, etc.
8. Develop media programs to inform students, parents, and community citizens about energy resources.
9. Investigate existing community energy program(s) and develop a plan whereby students can actively participate in the program(s)
10. Investigate various types of recreational activities in terms of energy consumption, develop energy conscience alternate suggestions, and evaluate the energy conservation which would result.
11. Develop a checklist of energy conservation practices for the classroom or home and attempt to conserve energy by following these practices. (Example: Using both sides of paper, turning off all lights when leaving room, etc.)

V. GUIDING PRINCIPLES FOR GIFTED AND TALENTED ENVIRONMENTAL EDUCATION PROGRAMS

Environmental Education should:

a. consider the environment in its totality - natural and man-made, technological and social (economic, political, cultural-historical, moral, esthetic);

b. be a continuous lifelong process, beginning at the pre-school level and continuing through all formal and nonformal stages;

c. be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;

d. examine major environmental issues from local, national, regional and international points of view so that students receive insights into environmental conditions in other geographical areas;

e. focus on current and potential environmental situations while taking into account the historical perspective;

f. promote the value and necessity of local, national and international cooperation in the prevention and solution of environmental problems;

g. explicitly consider environmental aspects in plans for development and growth;

h. enable gifted and talented students to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences;

i. relate environmental sensitivity, knowledge, problem-solving skills and values clarification to every age, but with special emphasis on environmental sensitivity to the learner's own community in early years;

j. help gifted and talented students discover the symptoms and real causes of environmental problems;

k. emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;

l. utilize diverse learning environments and a broad array of educational approaches to teaching/learning about and from the environment with due stress on practical activities and first-hand experience.

VI. RESOURCES FOR GIFTED AND TALENTED ENVIRONMENTAL PROJECTS

A vast reservoir of natural and human resources exists in most Indiana communities. These resources could become an integral part of gifted and talented projects. Teachers and students designing environmental action programs may wish to involve some of the agencies and individuals listed below in their projects:

A. BUSINESS, INDUSTRY AND ORGANIZATIONS

Don't overlook industry, organizations, and businesses as potential supporters for gifted and talented projects. Several schools in Indiana have involved industry and businesses in planning projects. They can often provide resource persons, financial assistance, tours, material resources, and community support for activities that benefit the school and community.

B. COOPERATIVE EXTENSION SERVICE

Each Indiana county seat has a Cooperative Extension Office. Staff from this office can provide teachers and students with maps, 4-H materials for projects in soils, wildlife, weather, conservation, etc. Consulting services are also available to assist with the planning of 4-H projects, clubs and environmental activities.

C. COOPERATIVE EXTENSION SERVICE PUBLICATION

Cooperative Extension Service
Purdue University
West Lafayette, IN 47907

Ask for: ENVIRONMENTAL EDUCATION, EDUCATION FOR THE SEVENTIES. This publication lists curriculum materials, films, pollution games, lesson plans, resource agencies, etc. Price: $3.50.

D. ENVIRONMENTAL QUALITY CONTROL, INC.

EQC is a non-profit organization which represents major industries in Indiana. This organization can provide information concerning: 1) energy, air and water pollution legislation; 2) a bibliography of environmental materials; 3) information concerning efforts of Indiana industries to control pollution, etc. Write to:

Executive Director
Environmental Quality Control, Inc.
1220 Waterway Boulevard
Indianapolis, IN 46202

E. GOVERNOR'S PRIDE PROGRAM

The Governor's PRIDE staff has lists of people and agencies who can: 1) Provide environmental and energy education materials; 2) Provide access to other state and national programs. (Keep America Beautiful, Johnny Horizon, Pitch-In, etc.) Write to:

Indiana Energy Group
115 N. Pennsylvania
7th Floor, Consolidated Bldg.
Indianapolis, IN 46204

F. INDIANA DEPARTMENT OF PUBLIC INSTRUCTION

This state agency can provide: 1) Copies of the state guidelines, TOTAL ENVIRONMENT EDUCATION. (This publication contains excellent ideas for student action projects.) 2) Access to environmental films; 3) Information about existing projects and 4) Consulting services to help write a project. Write to:

Environmental Education Consultant
Division of Curriculum
Indiana Department of Public Instruction
Room 229, State House
Indianapolis, IN 46204

G. INDIANA STATE BOARD OF HEALTH

This state agency has free films, teaching materials, and access to environmental information about air, water and noise pollution.

Write to:

Health Education
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, IN 46206

H. MAYOR'S OFFICE OR CITY COUNCIL

In many Indiana communities the mayor and his staff or the city council can provide teachers and students access to maps, free materials, information about sewage and water treatment facilities, future plans for city, etc. Local governmental officials may also provide opportunities for students to attend public hearings and testify on the behalf of an environmental issue.

I. SOIL CONSERVATION SERVICE

Each county seat in Indiana has a SCS office. This federal agency can provide maps, films, free land use materials, teaching materials, and consulting services for planning gardens, school site beautification projects, nature centers or outdoor classrooms, etc.

J. TEACHERS, PARENTS, STUDENTS, AND OTHER COMMUNITY INDIVIDUALS

As teachers and students initiate a project, they should involve others in their school and community. People are a resource which can improve the quality of the program.

The above are examples of some of the many community and human resources available to educators and gifted and talented students. A search of the local community will reveal that many individuals and agencies are interested in their environment. Capitalize on these interests by involving people, young and old, in an Environmental

Education Project. This involvement will help educate them about environmental issues and provide the support needed to implement gifted and talented programs.

Today's gifted and talented students are tomorrow's major policy decision-makers. If they appreciate and understand the environment today they'll safeguard it tomorrow. Environmental education will help develop a cadre of gifted and talented leaders who are aware of, and concerned about, the environment and its associated problems and who have the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions to current local, state, national and international problems, and the prevention of new ones.